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CORYNEUM PEZIZOIDES E. & E.

On rough outer bark of willow, Golden, Colorado, March, 1897. (E. Bethel, no. 213.)

Acervuli erumpent-superficial, at first punctiform, then orbicular, ⅓–½ mm. diam., black, mostly plane or slightly concave above, with the surface roughened as if by minute projecting ostiola; conidia oblong, 3-septate, constricted at the septa, olive-brown, 20–25×6–7μ, on basidia about 15μ long.

CORYNEUM NEGUNDINIS E. & E.

On dead limbs of *Negundo aceroides*, Denver, Colo., March, 1897. (E. Bethel.)

Acerculi subepidermal, at first separate, soon confluent and throwing off the epidermis, exposing a black continuous uneven layer seated on the inner bark; conidia obovate or elliptical, 2-septate, constricted at the septa or quite as often not constricted, yellow-brown, 20–30 exceptionally 40×12–15μ, on stout (15–20 ×4–5μ), subhyaline, subtorulose, continuous or faintly septate basidia.

The absence of erect sterile hyphae separates this from *Septosporium*, which, in the mature effused state, it much resembles.

HOMOSTEGIA DIPLOCARPA E. & E. Bull. Torr. Club, 24: 135. 1897.

This should be *Phyllachora diplocarpa*, under which name it was distributed in N. A. F. 3439 & F. Col. 955. The 3-septate spores mentioned being only stylospores could not enable this to rank as *Homostegia*. The stroma too is like that of *Phyllachora*.

Rarities from Montana.—III.

BY P. A. RYDBERG.

PEDICULARIS MONTANENSIS.

Stem 3–4 m. high, simple, rather slender, more or less tinged with dark purple, glabrous; leaves pinnate, glabrous; segments ½–1 inch long, lanceolate, doubly serrate; spike short and dense, 3–6 cm., seldom 8 or 9 cm. long; bracts ovate, acuminate, about half as long as the flower, puberulent and villous-ciliolate and more or less purple-tinged as well as the calyx; calyx-lobes subulate; corolla 1.5 cm. long, purplish except a part of the lip which is yellow; galea much longer than the lip, lower portion straight, the apex cucullate and the tip not rostrate; lip 3-cleft, lateral lobes rounded and broad, middle one generally truncate and ciliolate at the margin.

A very near relative of *P. bracteata*, and perhaps only a variety thereof. The habit and form of the leaves are the same, except that *P. Montanensis* is a much more slender plant and has a shorter spike. In *P. bracteosa* the spike is often 2–3 dm. long, the bracts, especially the lower, fully as long as the light yellow corolla, the lateral lobes of lip are smaller.

Type: J. H. Flodman, no. 796, from Little Belt Mountains, nine miles from Barker, August 18, 1896.

PEDICULARIS CTENOPHORA.

Stem from a thickened caudex, about 3 dm. high, glabrous, strict, striate; leaves numerous, especially at the base, glabrous, rather thickish, pinnately divided into linear-lanceolate serrate segments; spike about 1 dm. long, rather loose; bracts broadly ovate in outline, pectinately divided; calyx gibbous above, purple-striate, more or less villous-ciliate at the base; corolla purplish; galea arcuate, produced into an elongated incurved beak; lip very broad, especially the lateral lobes.

It is a near relative of *P. contorta*, from which it differs in the color of the flowers, the more gibbous and purple-striate calyx, its hairiness at the base and the much larger and broader bracts.

Type: Rydberg, no. 2789, collected on the side of a snowclad mountain, near Lima, Montana, July 29, 1895.

GILIA CEPHALOIDEA n. sp.

G. spicata var. *capitata* Gray, Syn. Fl. **2**; part 1, 144, 1886 (in part): not Proc. Am. Acad. **8**: 274, 1870, nor *G. capitata* Sims, Bot. Mag. 53: *pl. 2698.* 1826.

Jenney's plant collected in the Black Hills of South Dakota was included by Gray in the Synoptical Flora in *G. spicata capitata.* It is however scarcely the same as Hall & Harbour's no. 461, the type of the variety. The species, represented by Jenney's plant, my own no. 886, collected 1892, in the same region and no. 2764 collected near Lima, Mont., in 1895, differs from *Gilia spicata* not only in the subcapitate inflorescence, but also in the form and color of the flower. In *G. spicata* the corolla is greenish or dull white, has a tube which is fully twice as long as the calyx, and oblong segments that are only one-third the length of the tube. In *G. cephaloidea* the corolla is pure white, tube only ⅓ or ½ longer than the calyx and the segments elliptical and about half as long as the tube. The leaves are fully as much divided as in the former, but the plant is more woolly.

LAPPULA AMERICANA (Gray).

Echinospermum deflexum var. *Americanum* Gray, Proc. Am. Acad. 17: 224.

I think this is quite distinct from the European *L. deflexa.* The species of the Mississippi Valley and westward is a much larger plant, with a many-flowered divergently paniculate-branched inflorescence and broadly oblanceolate leaves. The European *L. deflexa* has almost linear leaves. *L. Americana* was collected by the author at Deer Lodge, Mont., in 1895 (no. 2775), a point much further west than the supposed range of the species.

ERIGERON OBLANCEOLATUS.

Stem from an apparently biennial root, 3–5 dm. high, striate, finely strigose, branched above; basal and lower leaves oblanceolate, tapering into a winged petiole, pointed, the margins ciliolate and with a few small but sharp teeth; stem-leaves linear, diminishing upward, the uppermost bract-like; heads 1–3, comparatively large, 15–25 mm. in diameter and about 10 mm. high; bracts 40–50, narrowly linear, acuminate, strigose; rays numerous, generally about 100, very narrow.

In the size and form of the head and bracts it most resembles *E. speciosus* and *E. subtrinervis.* In general habit it resembles somewhat *E. glabellus* Nutt., but differs by the much larger heads, the toothing of the lower leaves and the weak root system, which indicates a biennial, or a perennial by biennial offsets (the specimens show no stolons). In the latter case the plant should be placed nearest *E. Philadelphicus*, from which it is easily distinguished by the thin narrow leaves, the form and size of their teeth and by the few and larger heads.

Montana: Deer Lodge, July 10, 1895, collected by the author, no. 2822; Helena, June, 1889, by F. D. Kelsey.

ERIGERON ASPERUGINEUS (D. C. Eaton) Gray, Proc. Am. Acad. 16: 91. 1882.

Aster asperugineus D. C. Eaton, Bot. King's Exp. 142. 1871.

This species was collected at Melrose, Mont., July 6, 1895, no. 2823.

ERIGERON SUBCANESCENS.

Diplopappus canescens Hook. Fl. Bor. Am. 2: 21. 1834.

Erigeron canescens T. & G. Fl. N. Am. **2**: 179. 1841–2. Not Willd.

This was included in *E. caespitosum* Nutt. by Dr. Gray, but I believe it to be a fairly good species, differing by the more slender and erect stems, the longer and narrower leaves, finer pubescence, smaller heads and narrower bracts.

It was collected by Flodman in the Spanish Basin, July 22, 1896, no. 836.

ERIGERON ANGUSTIFOLIUS (Gray).

Aster salsuginosus var. *angustifolius* Gray, Bot. Calif. **1**: 325. 1876.

E. salsuginosus var. *angustifolius* Gray, Proc. Am.Acad. **16**: 93. 1880.

From the field observations of Mr. Flodman and myself, I judge this to be as good a species as most of the group. It was collected by Flodman near the Little Belt Pass, Aug. 10, 1896, altitude 7000 ft., no. 854.

ERIGERON MINOR (Hook).

E. glabratus var. *minor* Hook. Fl. Bor. Am. **2**: 18. 1834.

E. armeriaefolius Gray, Proc. Am. Acad. **8**: 648. In part. 1870. Not Turcz.

Gray includes in *E. armeriaefolius* two distinct American plants. Neither agrees with the original description. One of these is Hooker's *E. glabratus minor*, the other his *E. lonchophyllus*. A duplicate of the type of the former is in the Columbia herbarium. There are also the following specimens of the same plant:

Oregon: T. J. Howell, no. 3884. 1884.

Montana: J. H. Flodman, no. 839, 1896; P. A. Rydberg, no. 2824. 1895.

Northwest Territory: John Macoun. 1879.

South Dakota (Black Hills): P. A. Rydberg, no. 786. 1892.

Colorado: M. E. Jones, no. 471. 1878.

All these specimens differ from those cited under the following species in the following respects: The stem is low, 1–2 dm. high, very leafy; basal leaves numerous, the lowest spatulate; stem leaves linear, without petioles, ciliate at the base; inflorescence racemose, with heads on very short pedicels.

ERIGERON LONCHOPHYELLUS Hook. Fl. Bor. Am. 2: 18. 1834.

E. armeriaefolius Gray, l. c., in part. Not Turcz.

This is generally 3–6 dm. high; leaves rather scattered; basal leaves rather few and oblanceolate; stem leaves, except the uppermost, with distinct petioles; inflorescence more irregular and heads generally on elongated pedicels. The following specimens are in the Columbia Herbarium:

Utah: E. Palmer, no. 221. 1877. M. E. Jones, no. 1859. 1880.

Nevada: S. Watson, no. 536. 1868.

Montana: Rydberg, no. 2825. 1895.

ERIGERON MONTANENSIS n.n.

E. Tweedyana Canby & Rose, Bot. Gaz. 15: 65. 1890. Not *E. Tweedyi* Canby, Bot. Gaz. 13: 17. 1888.

This species has been collected again in Montana by J. H. Flodman, at the following stations: Elk Mountains, no. 837; Little Belt Mountains, near the Pass, no. 838.

ARTEMISIA GRAVEOLENS.

Perennial, somewhat woody at the base, with numerous simple branches, these strict and striate, glabrous; leaves twice or thrice pinnately dissected into narrow divisions, glabrous, or finely grayish pubescent beneath; heads in a narrow strict panicle, distinctly pedicelled, about 4 mm. in diameter; bracts ovate, glabrous, with a brownish scarious margin; flowers brown; whole plant heavy-scented and covered with glutinous dots.

It comes nearest to *A. discolor*, from which it differs in being almost glabrous, the pedicelled, not nodding heads, and the heavy scent.

Type: J. H. Flodman, no. 881, from Long Baldy in the Little Belt Mountains, Aug. 19, 1896. Also collected by Frank Tweedy, no. 310, in Park county, 1887.

ARTEMISIA CANDICANS.

Stem stout, nearly 1 m. high, tomentose, branched; leaves pinnately or twice pinnately divided into oblong segments, tomentose on both sides, grayish above, white beneath; heads sessile in clusters in a compound interrupted spike, 5–8 mm. in diameter; bracts oval, scarious-margined and tomentose.

It somewhat resembles *A. Tilesii elatior* T. & G. in habit but differs in the leaves, which are tomentose on both sides and have shorter not acuminate segments, and in the somewhat larger, strictly sessile heads with tomentose bracts.

Type: J. H. Flodman, no. 882, 1896, from Little Belt Mountains.

ARTEMISIA FLOCCOSA.

Stem stout, 5–7 dm. high, striate, tomentose; leaves pinnately divided into oblong segments, loosely white-tomentose on both sides; heads 5–6 mm. in diameter, erect, evidently pedicelled, in an elongated narrow raceme or panicle; bracts oval, scarious-margined and tomentose.

It is nearly related to the preceding, differing mainly in the looser tomentum, and the erect pedicelled slightly smaller heads. From *A. Tilesii elatior* it differs in the tomentum, the form of the leaves, and the erect heads with tomentose bracts.

Type: P. A. Rydberg, no. 2942, Lima, Aug. 6, 1895.

ARNICA FULGENS Pursh, Fl. Am. Sept. 2: 527. 1814.

I think that this is distinct from *A. alpina*, differing in the following characters: taller, stem often 3–4 dm. high, shorter pubescence, often 3 or 4 smaller heads, much broader and dentate leaves and often as many as many as 3 or 4 pairs of stem leaves.

It was collected by Mr. Flodman at Little Belt Pass, no. 891. 1896. My own specimens, no. 823, from the Black Hills, also belong here.

ARNICA GRACILIS.

Stem slender, 1–2 dm. high; whole plant glabrous, except a little glandular puberulence on the pedicels and involucre; basal leaves broadly ovate, petioled, dentate, 3-ribbed; stem leaves about 2 pairs, similar, the upper sessile; heads 1–3; disk 10–15 mm. high; bracts 12–15, oblong-lanceolate, acuminate; rays about 15 mm. long; achene almost glabrous.

It much resembles the preceding and may perhaps be a form of it, but differs by the smaller heads, the glandular-puberulent involucre and pedicels and the glabrous foliage and stem. It approaches depauperate forms of *A. latifolia*.

Type: J. H. Flodman, no. 901, 1896, from the Spanish Peaks.

ARNICA PEDUNCULATA.

Stem 3–6 dm. high, finely villous-pubescent, striate; basal leaves broadly oblong to almost linear, entire, 3-ribbed, tapering into a more or less winged petiole; stem leaves about 2 pairs, similar, but narrower and sessile; head on a peduncle that is often 2–2½ dm. long; bracts 18–20, linear or lanceolate, acute but not acuminate, villous-pubescent: disk 15–18 mm. high; rays fully 1½ cm. long, orange; achenes hirsute, pubescent.

It is somewhat between *A. foliosa incana* and *A. alpina* in habit, but differs from both by the long-peduncled solitary head and finer pubescence. It was collected by J. H. Flodman in the Spanish Basin, July 11, no. 899 (broad leaved) and July 10, no. 900 (narrow leaved), 1896. Also collected in Idaho by A. A. & Gertrude Heller, no. 3293, 1896, and in Washington during the Wilkes expedition.

SENECIO SALIENS.

S. triangularis β T. N. G. F: Am. 2 & l. 441. 1834.

Periennial from a thick rootstock and numerous matted roots; stem stout, 3–5 dm. high, glabrous, striate; leaves fleshy, deltoid-triangular, with salient teeth, the lower petioled, the upper sessile; inflorescence short, corymbose; heads about 1 cm. high; bracts linear; rays about 8 mm. long; achenes glabrous.

It is nearest related to *S. triangularis*, differing in the lower stature, the smaller thick and rather fleshy leaves, with fewer coarser less pointed teeth. The following specimens belong to it:

Montana: J. H. Flodman, no. 919, 1896, from Yogo Baldy in the Little Belt Mountains, altitude 7000 feet.

Wyoming: Fremont, in the Wind River Mountains, altitude 7000 feet.

Washington: Frank Tweedy, 1883, Yakima Region, altitude, 6700 feet.

SENECIO PSEUDAUREUS.

Perennial from a creeping rootstock; plant perfectly glabrous except the tips of the bracts; stem 5–8 dm. high; basal leaves broadly ovate, somewhat cordate at the base, serrate, 4–7 cm. long, long-petioled; stem leaves more or less laciniate at the base, the upper sessile; inflorescence corymbose, flat-topped, of 8–10 heads about 8 mm. high; bracts linear; rays orange, about 8 mm. long.

It most resembles *S. aureus* and represents it in the Rockies. It has the same large basal leaves as that species, but they are less cordate at the base, not quite as wide and serrate instead of crenate. *S. aureus* is a strictly Eastern species.

Montana: J. H. Flodman, no. 918, from Little Belt Mountains (type), and 918½ from Spanish Basin, 1896; Frank Tweedy, no. 340, Park county, 1887.

Nevada: S. Watson, no. 667, 1868.

SENECIO CROCATUS.

S. aureus var. *croceus* Gray, Proc. Acad. Phila. **1863**: 68. 1863. Not *S. croceus* DC.

This is well distinct from both the preceding and from *S. aureus*, differing in its smaller oval or obovate, coarsely and bluntly dentate, somewhat fleshy basal leaves. It represents *S. obovatus* of the East. It was collected in Montana by Mr. Flodman in the Little Belt Mountains, near the pass, no. 911.

CREPIS RUNCINATA ALPICOLA.

Stem scapose, about 1 dm. high, generally only 1-flowered; leaves entire, or with a few small teeth, and with very short petioles.

In habit it is very unlike the typical *C. runcinata*, but I have been unable to find any essential characters in the heads, involucre, pappus or achenes, by which to separate it as a species. The short 1-flowered stem, smaller and more entire leaves may be due to the high altitude, 7000 feet, at which it grew.

Type: Flodman, no 931, August 24, 1896, from Yogo Baldy, Little Belt Mountains.

Antennaria dioica and its North American Allies.

BY P. A. RYDBERG.

In 1892 when I began to determine my Black Hills collection, I felt that there must be something wrong in the genus *Antennaria*, especially in the group of which *A. dioica* is the representative species. My studies then, my field work in 1895 and 1896, and Mr. Flodman's collection have made it possible I think to remove at least a part of the difficulty. What have been named in our herbaria *A. dioica* and *A. alpina* constitute not less than six distinct species. I suspected that *A. plantaginifolia* contains more than one species, but have not been able to satisfactorily solve the problem. This seems to have been done by Prof. E. L. Greene in a recent